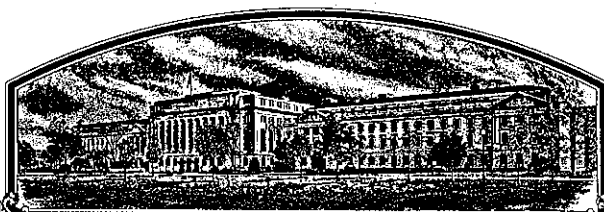


No.

8900266



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

W - H Research, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE
Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (1942, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

ALFALFA

'WL 317



In Testimony Whereof, I have hereunto set
my hand and caused the seal of the Plant
Variety Protection Office to be affixed
at the City of Washington, D.C.
this 31st day of May in
the year of our Lord one thousand nine
hundred and ninety.

Attest:

Kenneth H. Evans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Clayton Gentler
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate) W-L Research, Inc.		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO. 85-126	3. VARIETY NAME WL 317
4. ADDRESS (street and no. or R.F.D. no., city, state, and ZIP) 2000 Oak Street Bakersfield, CA 93301		5. PHONE (include area code) (805) 327-4491	FOR OFFICIAL USE ONLY PVPO NUMBER 8900266 Filing Date July 13, 1989 Time 9:30 <input checked="" type="checkbox"/> A.M. <input type="checkbox"/> P.M. Filing and Examination Fee: \$2150.00 Date July 13, 1989 Certificate Fee: \$250.00 Date May 10, 1990
6. GENUS AND SPECIES NAME Medicago sativa L.	7. FAMILY NAME (Botanical) Leguminosae		
8. CROP KIND NAME (Common Name) Alfalfa	9. DATE OF DETERMINATION Nov. 1, 1985		
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) Corporation			
11. IF INCORPORATED, GIVE STATE OF INCORPORATION California		12. DATE OF INCORPORATION June 30, 1988	
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS M. A. Peterson, Director of Research W-L Research, Inc. 8701 Hwy. 14 Evansville, WI 53536-9593 PHONE (include area code): (608) 882-4100			

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow INSTRUCTIONS on reverse)

a. ☒ Exhibit A, Origin and Breeding History of the Variety.

b. ☒ Exhibit B, Novelty Statement.

c. ☒ Exhibit C, Objective Description of Variety.

d. ☒ Exhibit D, Additional Description of Variety.

e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership.

f. ☒ Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office June 29, 1989

g. ☒ Filing and Examination Fee (\$2,150) made payable to "Treasurer of the United States."

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See section 83(a) of the Plant Variety Protection Act.)
☐ YES (If "YES," answer items 16 and 17 below) ☒ NO (If "NO," skip to item 18 below)

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
☒ YES ☐ NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
☒ FOUNDATION ☐ REGISTERED ☒ CERTIFIED

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.
☐ YES (If "YES," through ☐ Plant Variety Protection Act ☐ Patent Act. Give date:)
☒ NO

19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETING IN THE U.S. OR OTHER COUNTRIES?
☐ YES (If "YES," give names of countries and dates)
☒ NO

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

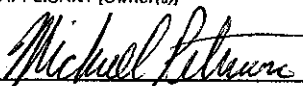
SIGNATURE OF APPLICANT [Owner(s)] 	CAPACITY OR TITLE Vice President/Director of Research	DATE June 29, 1989
SIGNATURE OF APPLICANT [Owner(s)]	CAPACITY OR TITLE	DATE

Exhibit AOrigin and Breeding History of WL 317

WL 317 is an 83-plant synthetic variety resulting from two cycles of phenotypic recurrent selection; the first for resistance to stem nematode and Verticillium wilt (sequentially within the same cycle), followed by one cycle for resistance to Phytophthora root rot. The source population resulted from an intercross between two WL experimental lines, one screened for anthracnose resistance and the other for Phytophthora root rot resistance. Parental germplasm traces primarily to Vernal (30%), Vertus (25%), Atlantic (31%), and Saranac (9%), with lesser contribution from Ranger (5%). The 83 parent plants were grown under cage isolation at Bakersfield, CA in 1985 with Syn 1 seed considered Breeder class.

Approximate germplasm source contributors are; M. falcata - 6%, Ladak - 11%, M. varia - 38%, Turkistan - 4%, Flemish - 34%, and Chilean - 7%.

Type and Frequency of Variants

No variants are recognized in WL 317 beyond the limits given in Exhibit C.

Evidence of Uniformity and Stability

WL 317 is stable in all essential and distinguishing characteristics (e.g. flower color) during normal seed production. WL 317 is as uniform as other alfalfa varieties previously accepted by state seed certification programs.

Table 1 > Anthracnose Resistance* - Highland, MD (1986)

<u>Entry</u>	<u>% Resistance</u>
Saranac AR (R)	36
Saranac (S)	1
WL 317 (R)	24
DK 120 (S)	3
Arrow (MR)	14
LSD .05	8
CV %	29

*Data obtained from a replicated greenhouse flat-test.

Table 2 > Spotted Alfalfa Aphid Resistance* - Bakersfield, CA (1988)

<u>Entry</u>	<u>% Resistance</u>	<u>A.S.I.</u>
Kanza (R)	29	4.0
Ranger (S)	0	5.0
WL 317 (R)	33	3.9
Arrow (LR)	8	4.6
DK 120 (LR)	6	4.8
LSD .05		0.4
CV %		5.6

*Data obtained from a replicated greenhouse test.

Exhibit BNovelty Statement for WL 317

WL 317 is a dormant variety that possesses superior disease, insect, and nematode resistance when compared to most varieties with similar fall growth characteristics. WL 317 is most similar to Arrow in growth type, appearance, and pest resistance. However, WL 317 is resistant to anthracnose (Arrow = MR, Table 1), and is resistant to spotted alfalfa aphid (Arrow = LR, Table 2). WL 317 is also similar to DK 120. However, WL 317 is resistant to anthracnose (DK 120 = S, Table 1), and is resistant to spotted alfalfa aphid (DK 120 = LR, Table 2). WL 317 is also similar to Oneida VR. However, WL 317 is highly resistant to phytophthora root rot (Oneida VR = MR, Table 3), and WL 317 is resistant to Verticillium wilt (Oneida VR = HR, Table 4). WL 317 is also similar to Chief. However, WL 317 is a Ranger-type fall dormant (Chief = Saranac-type dormancy, Table 5), and WL 317 is highly resistant to Fusarium wilt (Chief = R, Table 6). WL 317 is also similar to Magnum III. However, WL 317 is resistant to Verticillium wilt (Magnum III = MR, Table 4), and WL 317 is highly resistant to phytophthora root rot (Magnum III = R, Table 3).

Table 3 > Phytophthora Root Rot Resistance* - Evansville, WI (1988)

<u>Entry</u>	<u>% Resistance</u>
Agate (R)	44
Saranac (S)	3
WL 317 (HR)	64
Oneida VR (MR)	28
Magnum III (R)	39
LSD .05	10
CV %	16

*Data obtained from a replicated greenhouse tub-test.

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Table 4 > Verticillium Wilt Resistance* - Warden, WA (1986)

<u>Entry</u>	<u>% Resistance</u>	<u>A.S.I.</u>
Vertus (R)	35	3.3
Saranac (S)	3	4.4
WL 317	31	3.3
Oneida VR (HR)	53	2.9
Magnum III (MR)	22	3.7
LSD .05		0.3
CV %		5.7

*Data obtained from a replicated greenhouse test.

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Table 5 > Fall Dormancy Reaction* - Warden, WA (1988)

<u>Entry</u>	<u>Fall Height (Inches)</u>
Vernal (2)**	4.5
Ranger (3)	5.9
Saranac (4)	6.1
WL 317 (3)	5.2
Chief (4)	6.6
LSD .05	1.2
CV %	14.4

*Plots clipped 9/13/88, measured 10/18/88. Fall height measured in inches from a replicated space-plant nursery.

**Certified Alfalfa Seed Council scoring system.

Table 6 > Fusarium Wilt Resistance* - Evansville, WI (1988)

<u>Entry</u>	<u>% Resistance</u>	<u>A.S.I.</u>
Moapa 69 (HR)	84	0.85
Agate (R)	52	1.58
Narragansett (LR)	13	3.37
MnGN-1 (S)	7	4.31
WL 317 (HR)	61	1.49
Chief (R)	50	1.98
LSD .05	12	0.45
CV %	12	9.5

*Data obtained from a replicated space-plant nursery.

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK AND SEED DIVISION
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Alfalfa)

OBJECTIVE DESCRIPTION OF VARIETY
ALFALFA (*Medicago sativa* sensu Gunn et al.)

NAME OF APPLICANT(S) W-L RESEARCH, INC.	TEMPORARY DESIGNATION 85-126	VARIETY NAME WL 317
ADDRESS (Street and No., or R.F.D. No., City, State, and Zip Code) 2000 Oak Street Bakersfield, CA 93301		FOR OFFICIAL USE ONLY PVPO NUMBER 8900266

PLEASE READ ALL INSTRUCTIONS CAREFULLY: Place numbers in the boxes to designate the expressions which are characteristic of the commercial generations of the application variety. Data for quantitative plant characters should be based on a minimum of 100 plants. Include leading zeros when necessary (e.g., 089) for quantitative data. Comparative data should be determined from varieties entered in the same trial. Plant color may be precisely designated by using any recognized color chart, e.g., The Munsell Plant Tissue Color Charts.

1. WINTERHARDINESS:

7

CLASS:

- | | |
|--|--------------------------------------|
| 1 = Very Non-Winterhardy (CUF 101) | 2 = Non-Winterhardy (Moapa 69) |
| 3 = Intermediately Non-Winterhardy (Mesilla) | 4 = Semi-Winterhardy (Lahontan) |
| 5 = (Du Puits) | 6 = Moderately Winterhardy (Saranac) |
| 7 = (Ranger) | 8 = Winterhardy (Vernal) |
| 9 = Extremely Winterhardy (Norseman) | |

TEST LOCATION: Evansville, WI

2. FALL DORMANCY:

FALL DORMANCY (DETERMINED FROM SPACED PLANTINGS)

TESTING INSTITUTION AND LOCATION	DATE OF LAST CUT	DATE REGROWTH SCORED	REGROWTH SCORE OR AVERAGE HEIGHT				LSD .05
			APPLICATION VARIETY	CHECK VARIETIES*			
				Vernal	Ranger	Saranac	
W-L Research, Inc. Warden, WA	9/13/88	10/20/88	5.2	4.5	5.9	6.1	1.9

* CUF 101, Moapa 69, Mesilla, Lahontan, Du Puits, Saranac, Ranger, Vernal, or Norseman as appropriate.

Specify scoring system used: Height in inches from a replicated space-plant nursery6

Fall Growth Habit (Determined from Fall Dormancy Trials)

- | | | |
|----------------------------|--------------------------|----------------------------|
| 1 = Erect (CUF 101) | 3 = Semierect (Mesilla) | 5 = Intermediate (Saranac) |
| 7 = Semidecumbent (Vernal) | 9 = Decumbent (Norseman) | |

3. RECOVERY AFTER FIRST SPRING CUT (In Southwest, first cut after March 21):

3

- | | | | |
|--------------------------|--------------------|---------------------------|-------------------|
| 1 = Very Fast (CUF 101) | 3 = Fast (Saranac) | 5 = Intermediate (Ranger) | 7 = Slow (Vernal) |
| 9 = Very Slow (Norseman) | | | |

TEST LOCATION: Evansville, WI

4. AREAS OF ADAPTATION IN U.S. (Where tested and proven adapted):

1

Primary Area of Adaptation

26

Other Areas of Adaptation

- | | | | |
|--|-------------------------------|------------------|---------------|
| 1 = North Central | 2 = East Central | 3 = Southeast | 4 = Southwest |
| 5 = Moderately Winterhardy Intermountain | 6 = Winterhardy Intermountain | 7 = Great Plains | |
| 8 = Other (Specify) _____ | | | |



5. FLOWERING DATE (When 10% of plants possess open flowers at time of first spring cut):

- | | | | | | |
|---|---|-------------|-------------|-------------|--------------|
| 0 2 Days Earlier Than | 4 | | | | |
| Same As | 3 | 1 = CUF 101 | 2 = Mesilla | 3 = Saranac | 4 = Vernal |
| 0 4 Days Later Than | 2 | | | | 5 = Norseman |

TEST LOCATION: Evansville, WI

6. PLANT COLOR (Determined from healthy regrowth 3 weeks after first spring cut, controlling leafhoppers if necessary):

2

1 = Very Dark Green (524)

2 = Dark Green (Vernal)

3 = Light Green (Ranger)

Munsell, CO.,

COLOR CHART VALUE (Specify chart used): Munsell Color Charts, 1st Edition 1952, Baltimore, MD

APPLICATION VARIETY: 5/6

VERNAL: 5/6

TEST LOCATION: Evansville, WI - Measurements taken June 15, leafhoppers controlled with insecticide.

7. CROWN TYPE (Determined from spaced plantings):

2

Noncreeping Types:

1 = Broad (Vernal)

2 = Intermediate (Saranac)

3 = Narrow (CUF 101)

Creeping Types:

4 = Creeping Rooted (Rangelander)

5 = Rhizomatous (Rhizoma)

8. FLOWER COLOR (Determine frequency of plants for each color class as defined by USDA Agricultural Handbook No. 424 (Barnes 1972), allowing all plants in plot to flower):

0 9 9

% Purple and Violet (Subclasses 1.1 to 1.4)

0 0 0

% Blue (Subclasses 2.3 and 2.4)

0 0 1

% Variegated Other Than Blue (Subclasses 2.1, 2.2, 2.5 to 2.9)

0 0 0

% Yellow (Subclasses 4.1 to 4.4)

0 0 0

% Cream (Class 3)

0 0 0

% White (Class 5)

TEST LOCATION: Warden, WA

9. POD SHAPE (Determine frequency of plants with the following pod shapes produced on well cross-pollinated racemes):

1 0 0

% Tightly Coiled (One or more coils, center more or less closed)

0 0 0

% Loosely Coiled (One or more coils, center conspicuously open)

0 0 0

% Sickle (Less than 1 coil)

TEST LOCATION: Warden, WA

10. PEST RESISTANCE: Provide in the appropriate column, trial data for application variety, and resistant (R) and susceptible (S) check varieties, synthetic generation tested, average severity index scores (ASI), least significant difference statistics (LSD .05), the institution in charge of test, year, and location of test, and whether test is a field or laboratory evaluation. Describe scoring system, and any test procedure which differs from standard methods proposed by Elgin (1982). Trial data from other test years or locations should be presented whenever available on a separate document as Exhibit D.

Seeds of the check varieties and germplasm lines listed below can be obtained from the USDA Field Crops Laboratory, Bldg. 001, Rm. 335, BARC-West, Beltsville, MD 20705. Although comparisons with check varieties listed below are preferred, comparisons with any appropriate check variety recommended by Elgin (1982) may be presented.

A. DISEASE RESISTANCE:	DISEASE	VARIETY	SYN. GEN. TESTED	PERCENT RESISTANT PLANTS	NUMBER OF PLANTS TESTED	ASI	ASI LSD .05	INSTITUTION, YEAR, LOCATION, FIELD OR LABORATORY
Anthracnose, Race 1 (<i>Colletotrichum trifolii</i>) (R)	Application	Syn 1	24	330	--	% Resis. LSD(.05) 8	W-L Research, Inc. Highland, MD (1986)	
	XXX Saranac AR (R)	36	308	--				
	Saranac (S)	1	317	--				
	SCORING SYSTEM: % resistance based on survivors							
Anthracnose, Race 2 (<i>Collectotrichum trifolii</i>)	Application							
	Saranac AR (R)							
	Arc (S)							
	SCORING SYSTEM:							
Bacterial Wilt (<i>Corynebacterium insidiosum</i>) (HR)	Application	Syn 1	74	179	0.94		W-L Research, Inc. Evansville, WI (1988)	
	Vernal (R)	50	183	1.78				
	Narragansett (S)	17	188	2.65				
	SCORING SYSTEM: Plants scored 0 and 1 considered resistant on scale of 0-5.							
Common Leafspot (<i>Pseudopeziza medicaginis</i>)	Application							
	MSA-CW3AN3 (R)							
	Ranger (S)							
	SCORING SYSTEM:							

10. A. PEST RESISTANCE (Continued):

DISEASE	VARIETY	SYN. GEN. TESTED	PERCENT RESISTANT PLANTS	NUMBER OF PLANTS TESTED	ASI	ASI LSD .05	INSTITUTION, YEAR, LOCATION, FIELD OR LABORATORY
Downy Mildew (<i>Peronospora trifoliorum</i>)	Application						
Isolate, if known:	Saranac (R)						
	Kanza (S)						
SCORING SYSTEM:							
Fusarium Wilt (<i>Fusarium oxysporum</i> f. <i>medicaginis</i>)	Application	Syn 1	61	164	1.49		W-L Research, Inc. Evansville, WI (1988)
(HR)	Meson 80 (R) Agate (R)		52	172	1.58	0.45	
	Narkogen 80 (R) MnGN-1 (S)		8	168	4.31		
SCORING SYSTEM: Plants scored 0-5; 0 and 1 considered resistant and 5 = dead plant.							
Phytophthora Root Rot (<i>Phytophthora megasperma</i> f. <i>medicaginis</i>)	Application	Syn 1	54	228	--	% Resis.	W-L Research, Inc. Highland, MD (1988)
(HR)	Agate (R)		33	219	--	LSD(.05)	
	Saranac (S)		0	224	--	8	
SCORING SYSTEM: Percent resistance based on seedling survival							
Verticillium Wilt (<i>Verticillium albo-atrum</i>)	Application	Syn 1	31	312	3.3		W-L Research, Inc. Warden, WA (1986)
(R)	Vertus (R)		35	296	3.3	0.3	
	Saranac (S)		3	301	4.4		
SCORING SYSTEM: Plants score 1-5; 1 and 2 considered resistant and 5 = dead plant.							
Other (Specify)	Application						
	(R)						
	(S)						
SCORING SYSTEM:							
Other (Specify)	Application						
	(R)						
	(S)						
SCORING SYSTEM:							

B. INSECT RESISTANCE:

INSECT	VARIETY	SYN. GEN. TESTED	PERCENT DEFOLIATION	DEFOLIATION IN PERCENT OF RESISTANT CHECK	ASI	ASI LSD .05	INSTITUTION, YEAR, LOCATION, FIELD OR LABORATORY
Alfalfa Weevil (<i>Hypera postica</i>)	Application						
	Arc (R)			100			
	Saranac (S)						
SCORING SYSTEM:							

10. B. INSECT RESISTANCE (Continued):

INSECT	VARIETY	SYN. GEN. TESTED	PERCENT SEEDLING SURVIVAL	NUMBER OF SEEDLINGS TESTED	ASI	ASI LSD .05	INSTITUTION, YEAR, LOCATION, FIELD OR LABORATORY
Blue Alfalfa Aphid (<i>Acyrtosiphon kondoi</i>)	Application						
	CUF 101 (R)						
	PA-1 (S)						
	SCORING SYSTEM:						
Pea Aphid (<i>Acyrtosiphon pisum</i>) (HR)	Application	Syn 1	30	202	2.9	0.5	W-L Research, Inc. Bakersfield, CA (1988)
	Kanza (R)		22	208	3.3		
	Ranger (S)		1	235	4.6		
	SCORING SYSTEM: Plants scored 1-5; 1 and 2 resistant, 5 = dead plant						
Spotted Alfalfa Aphid (<i>Therioaphis maculata</i>) Biotype, if known: (H) (R)	Application	Syn 1	33	173	3.9	0.4	W-L Research, Inc. Bakersfield, CA (1988)
	Kanza (R)		29	168	4.0		
	Ranger (S)		0	153	5.0		
	SCORING SYSTEM: Plants scored 1-5; 1 and 2 resistant, 5 = dead plant						

INSECT	VARIETY	SYN. GEN. TESTED	PERCENT RESISTANT PLANTS	NUMBER OF PLANTS TESTED	ASI	ASI LSD .05	INSTITUTION, YEAR, LOCATION, FIELD OR LABORATORY
Potato Leafhopper Yellowing (<i>Empoasca fabae</i>)	Application						
	MSA-CW3An3 (R)						
	Ranger (S)						
	SCORING SYSTEM:						
Other (Specify)	Application						
	(R)						
	(S)						
	SCORING SYSTEM:						

C. NEMATODE RESISTANCE:							
NEMATODE	VARIETY	SYN. GEN. TESTED	PERCENT RESISTANT PLANTS	NUMBER OF PLANTS TESTED	ASI	ASI LSD .05	INSTITUTION, YEAR, LOCATION, FIELD OR LABORATORY
Northern Root Knot (<i>Meloidogyne hapla</i>) (MR)	Application	Syn 1	51	220	1.7	0.6	W-L Research, Inc. Warden, WI (1988)
	Nev. Syn. XX (R)		89	208	1.1		
	Lahontan (S)		18	215	2.5		
	SCORING SYSTEM: Plants scored 1-4; 1 = resistant (no galls), 4 = severely galled						

10. C. NEMATODE RESISTANCE (Continued):

NEMATODE	VARIETY	SYN. GEN. TESTED	PERCENT RESISTANT PLANTS	NUMBER OF PLANTS TESTED	ASI	ASI LSD .05	INSTITUTION, YEAR, LOCATION, FIELD OR LABORATORY
Southern Root Knot (<i>Meloidogyne incognita</i>)	Application						
	Moapa 69 (R)						
	Lahontan (S)						
	SCORING SYSTEM:						
Stem Nematode (<i>Ditylenchus dipsaci</i>) (R)	Application	Syn 1	29	203	3.2	0.4	W-L Research, Inc. Warden, WA (1987)
	Lahontan (R)		34	213	3.0		
	Ranger (S)		3	207	4.2		
	SCORING SYSTEM: Plants scored 1-5; 1 and 2 resistant and 5 = dead plant						
Other (Specify)	Application						
	(R)						
	(S)						
	SCORING SYSTEM:						

11. INDICATE THE VARIETY THAT MOST CLOSELY RESEMBLES THE APPLICATION VARIETY FOR EACH OF THE FOLLOWING CHARACTERS:

CHARACTER	VARIETY	CHARACTER	VARIETY
Winterhardiness	Arrow	Plant Color	Arrow
Recovery After 1st Cut	Magnum III	Crown Type	WL 315
Area of Adaptation	P 5432	Combined Disease Resistance	Arrow
Flowering Date	DK 120	Combined Insect Resistance	Chief

REFERENCES

Barnes, D.K. 1972. A System for Visually Classifying Alfalfa Flower Color. U.S. Dep. Agric. Handb. 424. 18 pp. (Note: Greenish cast of plate 6, A and B is an artifact of printing, actual colors a blend of yellow and white.)

Elgin, J.H., Jr., (ed.). 1982. Standard Tests to Characterize Pest Resistance in Alfalfa Cultivars. U.S. Dep. Agric. Tech. Bull. (In Press).

Gunn, C.R., W.H. Skrdla, and H.C. Spencer. 1978. Classification of *Medicago sativa* L. using legume characters and flower colors. U.S. Dep. Agric. Tech. Bull. 1574. 84 pp.

Munsell Color Co. 1977. Munsell Plant Tissue Color Charts. Munsell Color Co., Inc. Baltimore.

NOTE: Any additional descriptive information and supporting documentation may be provided as Exhibit D.

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK AND SEED DIVISION
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MARYLAND 20705

Adjusted data

OBJECTIVE DESCRIPTION OF VARIETY
ALFALFA (*Medicago sativa* sensu Gunn et al.)

NAME OF APPLICANT(S) W-L Research, Inc.	TEMPORARY DESIGNATION 85-126	VARIETY NAME WL 317
ADDRESS (Street and No., or R.F.D. No., City, State, and Zip Code)		FOR OFFICIAL USE ONLY PVPO NUMBER

PLEASE READ ALL INSTRUCTIONS CAREFULLY: Place numbers in the boxes to designate the expressions which are characteristic of the commercial generations of the application variety. Data for quantitative plant characters should be based on a minimum of 100 plants. Include leading zeros when necessary (e.g., 0 8 9) for quantitative data. Comparative data should be determined from varieties entered in the same trial. Plant color may be precisely designated by using any recognized color chart, e.g., The Munsell Plant Tissue Color Charts.

1. WINTERHARDINESS:

☐

CLASS:

1 = Very Non-Winterhardy (CUF 101)

2 = Non-Winterhardy (Moapa 69)

3 = Intermediately Non-Winterhardy (Mesilla)

4 = Semi-Winterhardy (Lahontan)

5 = (Du Puits)

6 = Moderately Winterhardy (Saranac)

7 = (Ranger)

8 = Winterhardy (Vernal)

9 = Extremely Winterhardy (Norseman)

TEST LOCATION: _____

2. FALL DORMANCY:

FALL DORMANCY (DETERMINED FROM SPACED PLANTINGS)

TESTING INSTITUTION AND LOCATION	DATE OF LAST CUT	DATE REGROWTH SCORED	REGROWTH SCORE OR AVERAGE HEIGHT			LSD .05
			APPLICATION VARIETY	CHECK VARIETIES*		

* CUF 101, Moapa 69, Mesilla, Lahontan, Du Puits, Saranac, Ranger, Vernal, or Norseman as appropriate.

Specify scoring system used: _____

☐

Fall Growth Habit (Determined from Fall Dormancy Trials)

1 = Erect (CUF 101)

3 = Semierect (Mesilla)

5 = Intermediate (Saranac)

7 = Semidecumbent (Vernal)

9 = Decumbent (Norseman)

3. RECOVERY AFTER FIRST SPRING CUT (In Southwest, first cut after March 21):

☐

1 = Very Fast (CUF 101)

3 = Fast (Saranac)

5 = Intermediate (Ranger)

7 = Slow (Vernal)

9 = Very Slow (Norseman)

TEST LOCATION: _____

4. AREAS OF ADAPTATION IN U.S. (Where tested and proven adapted):

☐

Primary Area of Adaptation

☐☐

Other Areas of Adaptation

1 = North Central

2 = East Central

3 = Southeast

4 = Southwest

5 = Moderately Winterhardy Intermountain

6 = Winterhardy Intermountain

7 = Great Plains

8 = Other (Specify) _____



5. FLOWERING DATE (When 10% of plants possess open flowers at time of first spring cut):

☐

Days Earlier Than

☐

Same As

☐

1 = CUF 101

2 = Mesilla

3 = Saranac

4 = Vernal

5 = Norseman

☐

Days Later Than

☐

TEST LOCATION: _____

adjusted data

6. PLANT COLOR (Determined from healthy regrowth 3 weeks after first spring cut, controlling leafhoppers if necessary):

☐

1 = Very Dark Green (524)

2 = Dark Green (Vernal)

3 = Light Green (Ranger)

COLOR CHART VALUE (Specify chart used: _____):

APPLICATION VARIETY: _____

VERNAL: _____

TEST LOCATION: _____

7. CROWN TYPE (Determined from spaced plantings):

☐

Noncreeping Types:

1 = Broad (Vernal)

2 = Intermediate (Saranac)

3 = Narrow (CUF 101)

Creeping Types:

4 = Creeping Rooted (Rangelander)

5 = Rhizomatous (Rhizoma)

8. FLOWER COLOR (Determine frequency of plants for each color class as defined by USDA Agricultural Handbook No. 424 (Barnes 1972), allowing all plants in plot to flower):

☐

% Purple and Violet (Subclasses 1.1 to 1.4)

☐

% Blue (Subclasses 2.3 and 2.4)

☐

% Variegated Other Than Blue (Subclasses 2.1, 2.2, 2.5 to 2.9)

☐

% Yellow (Subclasses 4.1 to 4.4)

☐

% Cream (Class 3)

☐

% White (Class 5)

TEST LOCATION: _____

9. POD SHAPE (Determine frequency of plants with the following pod shapes produced on well cross-pollinated racemes):

☐

% Tightly Coiled (One or more coils, center more or less closed)

☐

% Loosely Coiled (One or more coils, center conspicuously open)

☐

% Sickle (Less than 1 coil)

TEST LOCATION: _____

10. PEST RESISTANCE: Provide in the appropriate column, trial data for application variety, and resistant (R) and susceptible (S) check varieties, synthetic generation tested, average severity index scores (ASI), least significant difference statistics (LSD .05), the institution in charge of test, year, and location of test, and whether test is a field or laboratory evaluation. Describe scoring system, and any test procedure which differs from standard methods proposed by Elgin (1982). Trial data from other test years or locations should be presented whenever available on a separate document as Exhibit D.

Seeds of the check varieties and germplasm lines listed below can be obtained from the USDA Field Crops Laboratory, Bldg. 001, Rm. 335, BARC-West, Beltsville, MD 20705. Although comparisons with check varieties listed below are preferred, comparisons with any appropriate check variety recommended by Elgin (1982) may be presented.

A. DISEASE RESISTANCE:

A. DISEASE RESISTANCE:	DISEASE	VARIETY	SYN. GEN. TESTED	PERCENT RESISTANT PLANTS	NUMBER OF PLANTS TESTED	ASI	ASI LSD .05	INSTITUTION, YEAR, LOCATION, FIELD OR LABORATORY
(R)	Anthrachnose, Race 1 (<i>Colletotrichum trifolii</i>)	Application	Syn 1	43	330	--	% Resis.	W-L Research, Inc. Highland, MD (1986) Greenhouse
		ARC Saranac AR (R)		65	308	--	LSD (.05)	
		Saranac (S)		2	317	--	8	
	SCORING SYSTEM: % resistance based on survivors. Data are based on actual resistance x 1.8. Adjustment by W-L Research.							
	Anthrachnose, Race 2 (<i>Colletotrichum trifolii</i>)	Application						
		Saranac AR (R)						
		Arc (S)						
	SCORING SYSTEM:							
(HR)	Bacterial Wilt (<i>Corynebacterium insidiosum</i>)	Application	Syn 1	62	179	0.94	0.40	W-L Research, Inc. Evansville, WI (1986) Field
		Vernal (R)		42	183	1.78		
		Narragansett (S)		14	188	2.65		
	SCORING SYSTEM: Plants scored 0 and 1 considered resistant on scale of 0-5. Percent resistance are adjusted figures (actual x 0.84). Adjustment by W-L							
	Common Leafspot (<i>Pseudopeziza medicaginis</i>)	Application						
		MSA-CW3AN3 (R)						
		Ranger (S)						
	SCORING SYSTEM:							

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10. A. PEST RESISTANCE (Continued):

DISEASE	VARIETY	SYN. GEN. TESTED	PERCENT RESISTANT PLANTS	NUMBER OF PLANTS TESTED	ASI	ASI LSD .05	INSTITUTION, YEAR, LOCATION, FIELD OR LABORATORY
Downy Mildew (<i>Peronospora trifoliorum</i>) Isolate, if known:	Application						
	Saranac (R)						
	Kanza (S)						
	SCORING SYSTEM:						
Fusarium Wilt (<i>Fusarium oxysporum</i> f. <i>medicaginis</i>) No adjustments necessary	Application						
	Moapa 69 (R)						Field Evaluation
	Narragansett (R)						
	SCORING SYSTEM:						
Phytophthora Root Rot (<i>Phytophthora megasperma</i> f. <i>medicaginis</i>) No adjustments necessary	Application						
	Agate (R)						Greenhouse
	Saranac (S)						
	SCORING SYSTEM:						
Verticillium Wilt (<i>Verticillium albo-atrum</i>) Data provided on original application adjusted by W-L: actual % resistance x 1.3	Application						
	Vertus (R)						Field Evaluation
	Saranac (S)						
	SCORING SYSTEM:						
Other (Specify)	Application						
	(R)						
	(S)						
	SCORING SYSTEM:						
Other (Specify)	Application						
	(R)						
	(S)						
	SCORING SYSTEM:						
B. INSECT RESISTANCE:	VARIETY	SYN. GEN. TESTED	PERCENT DEFOLIATION	DEFOLIATION IN PERCENT OF RESISTANT CHECK	ASI	ASI LSD .05	INSTITUTION, YEAR, LOCATION, FIELD OR LABORATORY
Alfalfa Weevil (<i>Hypera postica</i>)	Application						
	Arc (R)			100			
	Saranac (S)						
	SCORING SYSTEM:						

10. B. INSECT RESISTANCE (Continued):

INSECT	VARIETY	SYN. GEN. TESTED	PERCENT SEEDLING SURVIVAL	NUMBER OF SEEDLINGS TESTED	ASI	ASI LSD .05	INSTITUTION, YEAR, LOCATION, FIELD OR LABORATORY
Blue Alfalfa Aphid (<i>Acyrtosiphon kondoi</i>)	Application						
	CUF 101 (R)						
	PA-1 (S)						
	SCORING SYSTEM:						
Pea Aphid (<i>Acyrtosiphon pisum</i>) (HR)	Application	Syn 1	88	202	2.9	0.5	W-L Research, Inc. Bakersfield, CA (19 Greenhouse
	Kanza (R)		65	208	3.3		
	Ranger (S)		3	235	4.6		
	SCORING SYSTEM: Data are actual % resistance x 2.9. Adjustment by W-L Research.						
Spotted Alfalfa Aphid (<i>Therioaphis maculata</i>) Biotype, if known: (H) (R)	Application	Syn 1	79	173	3.9	0.4	W-L Research, Inc. Bakersfield, CA (198 Greenhouse
	Kanza (R)		70	168	4.0		
	Ranger (S)		0	153	5.0		
	SCORING SYSTEM: Data are actual % resistance x 2.4. Adjustment by W-L Research.						

INSECT	VARIETY	SYN. GEN. TESTED	PERCENT RESISTANT PLANTS	NUMBER OF PLANTS TESTED	ASI	ASI LSD .05	INSTITUTION, YEAR, LOCATION, FIELD OR LABORATORY
Potato Leafhopper Yellowing (<i>Empoasca fabae</i>)	Application						
	MSA-CW3An3 (R)						
	Ranger (S)						
	SCORING SYSTEM:						
Other (Specify)	Application						
	(R)						
	(S)						
	SCORING SYSTEM:						

C. NEMATODE RESISTANCE:

NEMATODE	VARIETY	SYN. GEN. TESTED	PERCENT RESISTANT PLANTS	NUMBER OF PLANTS TESTED	ASI	ASI LSD .05	INSTITUTION, YEAR, LOCATION, FIELD OR LABORATORY
Northern Root Knot (<i>Meloidogyne hapla</i>)	Application						
	Nev. Syn. XX (R)						
	Lahontan (S)						
	SCORING SYSTEM:						

10. C. NEMATODE RESISTANCE (Continued):

Adjusted data

Actual Data

NEMATODE	VARIETY	SYN. GEN. TESTED	PERCENT RESISTANT PLANTS	NUMBER OF PLANTS TESTED	ASI	ASI LSD .05	INSTITUTION, YEAR, LOCATION, FIELD OR LABORATORY
Southern Root Knot (<i>Meloidogyne incognita</i>)	Application						
	Moapa 69 (R)						
	Lahontan (S)						
	SCORING SYSTEM:						
Stem Nematode (<i>Ditylenchus dipsaci</i>) (R)	Application	Syn 1	43	203	3.2	0.4	W-L Research, Inc. Warden, WA (1987) Greenhouse
	Lahontan (R)		50	213	3.0		
	Ranger (S)		4	207	4.2		
	SCORING SYSTEM: Data are actual % resistance x 1.47. Adjustment by W-L Research.						
Other (Specify)	Application						
	(R)						
	(S)						
SCORING SYSTEM:							

11. INDICATE THE VARIETY THAT MOST CLOSELY RESEMBLES THE APPLICATION VARIETY FOR EACH OF THE FOLLOWING CHARACTERS:

CHARACTER	VARIETY	CHARACTER	VARIETY
Winterhardiness		Plant Color	
Recovery After 1st Cut		Crown Type	
Area of Adaptation		Combined Disease Resistance	
Flowering Date		Combined Insect Resistance	

REFERENCES

Barnes, D.K. 1972. A System for Visually Classifying Alfalfa Flower Color. U.S. Dep. Agric. Handb. 424. 18 pp. (Note: Greenish cast of plate 6, A and B is an artifact of printing, actual colors a blend of yellow and white.)

Elgin, J.H., Jr., (ed.). 1982. Standard Tests to Characterize Pest Resistance in Alfalfa Cultivars. U.S. Dep. Agric. Tech. Bull. (In Press).

Gunn, C.R., W.H. Skrdla, and H.C. Spencer. 1978. Classification of *Medicago sativa* L. using legume characters and flower colors. U.S. Dep. Agric. Tech. Bull. 1574. 84 pp.

Munsell Color Co. 1977. Munsell Plant Tissue Color Charts. Munsell Color Co., Inc. Baltimore.

NOTE: Any additional descriptive information and supporting documentation may be provided as Exhibit D.

Exhibit DAdditional Description of Variety

WL 317 is a fall-dormant variety adapted to the northern half of the United States. Mid-summer growth is erect and fall growth is semi-erect.

To maintain varietal integrity, foundation (Syn 2 or 3) seed of WL 317 must be produced above 40° N. latitude or in areas where equivalent temperature extremes result from increased elevation. No limitation is placed on areas for certified (Syn 3 or 4) seed production.

Exhibit E

Statement of Applicant's Ownership

WL 317 is a proprietary alfalfa variety developed by the plant breeding staff of W-L Research, Inc., 2000 Oak Street, Bakersfield, California 93301.

Applications for plant variety protection on WL 317 have not been filed in any other country.